



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2013-0766; Directorate Identifier 2013-NE-26-AD; Amendment 39-17961; AD 2014-17-08]

RIN 2120-AA64

Airworthiness Directives; Pratt & Whitney Canada Corp. Turboprop Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for all Pratt & Whitney Canada Corp. (P&WC) PT6A-114 and PT6A-114A turboprop engines. This AD requires initial and repetitive borescope inspection (BSI) of compressor turbine (CT) blades, and the removal from service of blades that fail inspection. This AD was prompted by several incidents of CT blade failure, causing power loss, and engine failure. We are issuing this AD to prevent failure of CT blades, which could result in damage to the engine and damage to the airplane.

DATES: This AD becomes effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: For service information identified in this AD, contact Pratt & Whitney Canada Corp., 1000 Marie-Victorin, Longueuil, Quebec, Canada, J4G 1A1; phone: 800-268-8000; fax: 450-647-2888; Internet: www.pwc.ca. You may view this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2013-0766; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this AD, the mandatory continuing airworthiness information (MCAI), the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Document Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Robert Morlath, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7154; fax: 781-238-7199; email: robert.c.morlath@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a supplemental notice of proposed rulemaking (SNPRM) to amend 14 CFR part 39 by adding an AD that would apply to the specified products. The SNPRM was published in the Federal Register on May 12, 2014 (79 FR 26901). The SNPRM proposed to correct an unsafe condition for the specified products. The MCAI states:

There have been a number of reported incidents where Compressor Turbine (CT) blade failures have caused power loss on PT6A-114 & PT6A-114A engines, resulting in in-flight shutdown (IFSD). Investigation by engine manufacturer Pratt & Whitney Canada (P&WC) has determined that when operated at high power and high temperature settings, the subject CT blades are prone to crack/fracture as a result of creep and/or sulfidation.

P&WC issued Service Bulletin (SB) 1669 that introduces a newly designed CT blade which has proven to be far less affected by the blade “Creep” phenomenon. Additionally, to help prevent IFSD by identifying pending creep induced blade failure of the pre-SB 1669 configuration blades, P&WC has revised SB 1669 to include specific inspection/maintenance requirements for engines with pre-SB 1669 configuration CT blade installation.

An engine power loss or IFSD on a single engine powered aeroplane such as Cessna 208 could result in an unsafe condition. AD CF-2013-21 was issued on 1 August 2013 to mandate compliance with SB 1669R9 requirements to inspect and replace the existing CT blades on PT6A-114 & PT6A-114A engines with a new type of post SB 1669 configuration CT blades. P&WC, through SB 1727, has now introduced a new version of the post SB 1669 configuration CT blade that features a tighter tolerance on the platform width. This enhances the ability of the maintainer to achieve the required inter-platform gap.

Comments

We gave the public the opportunity to participate in developing this AD. We considered the comments received.

Request to Remove Mandatory Upgrade

One commenter requested that we remove the mandatory terminating action requirement to install P&WC single crystal CT blades, part numbers (P/Ns) 3072791-01 and 3072791-02. The commenter states that mandating the installation of an unproven replacement CT blade is not prudent and could be costly. The post-SB blade has a questionable operating history including failure. This blade has been identified for removal in the PT6A-34 and -36 engines, so it should not be made mandatory for installation in the PT6A-114 engine.

We do not agree. P&WC single crystal CT blades, P/Ns 3072791-01 and 3072791-02, are proven replacement CT blades for the PT6A-114 and PT6A-114A engines. These single crystal CT blades have successfully performed over 2 million flight hours in service and have displayed a lower rate of failure than older CT blade designs. An ongoing investigation into blade failures on other PT6A series engines has shown that the root cause of those failures does not impact the PT6A-114 and PT6A-114A fleets. Therefore, P&WC single crystal CT blades, P/Ns 3072791-01 and 3072791-02, have not been identified for removal from the PT6A-114 and PT6A-114A series engines. We did not change this AD.

Request to Change Mandatory Terminating Action

One commenter suggested that the 36-month compliance time for the mandatory terminating action is not appropriate. The commenter states that mandating replacement

of the complete set of single crystal CT blades with P/N 3072791-02 blades within 36 months is an undue cost burden for certain operators and that the availability of CT blade, P/N 3072791-02, is unreliable. The operator will not reach the next scheduled hot section interval prior to 36 months, thereby causing the performance of the next hot section inspection (HSI) sooner than necessary.

We do not agree. The 36-month compliance time for installing single crystal CT blades, P/Ns 3072791-01 and 3072791-02, adequately addresses the unsafe condition without imposing undue burden on operators. P&WC single crystal CT blades, P/Ns 3072791-01 and 3072791-02 are currently available from P&WC both as replacement parts and installed in new production engines. We did not change this AD.

Request to Change Mandatory Terminating Action

Hawkins Aero Engineering, Inc. (Hawkins Aero) requested that the mandatory terminating action be changed to allow for installation of CT blade P/Ns approved by the FAA in the future. The reason for this request is that P&WC and various parts manufacturer approval companies may develop new blade designs. Adding language that would allow for installation of newly approved blades in the future would avoid having to revise this AD.

We do not agree. We cannot approve P/Ns that do not exist. We did not change this AD.

Request to Change Referenced SB and P/N

One commenter requested that we remove P&WC SB No. PT6A-72-1669 and CT blade, P/N 3072791-01, from this AD. The commenter states that this SB introduces CT blade, P/N 3072791-01, which is no longer available. The commenter suggests that in this

AD, to avoid confusion when an operator reviews engine repair records to determine SB compliance, we should mention only P&WC SB No. PT6A-72-1727, which introduces single crystal CT blade, P/N 3072791-02.

We partially agree. We agree that referencing P&WC SB No. PT6A-72-1669 in this AD may introduce some confusion as to what P/Ns are mandated for installation.

We disagree with removing all references to P&WC SB No. PT6A-72-1669 from this AD because this SB contains instructions on performing the optional metallurgical examination cited in paragraph (e)(1)(iii)(B) of this AD.

We disagree with removing all references to single crystal CT blade, P/N 3072791-01, because it is still acceptable for installation even though it is no longer in production.

We made the following change to the Credit for Previous Actions paragraph of this AD: “If you performed a metallurgical examination of single crystal CT blades in accordance with P&WC SB No. PT6A-72-1669, Revision 9, dated June 28, 2013, or earlier versions, you met the initial inspection requirements of paragraph (e)(1)(i) of this AD. However, you must still comply with the repetitive BSI requirement of paragraph (e)(1)(ii) of this AD.”

Request to Change the Number of Stated Fatalities

Hawkins Aero requested that we re-evaluate the stated number of fatalities that have been associated with CT blade failures. Hawkins Aero then provided a brief synopsis of recent fatal incidents involving CT blade failures and associated forced landings that provide a different number than what was published in the SNPRM (79 FR 26901, May 12, 2014).

We partially agree. We agree that we should be accurate in what we report. We disagree that we must identify fatalities to demonstrate the need for the AD. We changed the justification statement in the Summary and Unsafe Condition paragraphs to state that “This AD was prompted by several incidents of CT blade failure, causing power loss, and engine failure.”

Request to Change the Costs of Compliance

One commenter requested that we re-evaluate the costs of compliance. The commenter states that the cost of performing the HSI, other than the cost of the blades, was not considered. The commenter also indicated that the hidden cost of installing the post-SB blades has not been revealed. The replacement single crystal CT blades have a hard time life limit of 10,000 hours, whereas the CT blades that are being replaced do not. The post-SB blades have a lower stretch inspection interval of 4,000 hours compared to 5,000 for pre-SB blades.

We do not agree. The cost of compliance calculation includes the initial work and parts costs associated with removing the unsafe condition. It does not include costs associated with normal scheduled maintenance. We did not change this AD.

Request to Approve Alternate Methods of Compliance (AMOCs)

Hawkins Aero requested that we approve AMOCs to this AD.

We do not agree. This AD sets forth our required method of compliance to correct the specified unsafe condition. Operators may request AMOCs to this AD using the procedures below. We did not change this AD.

Request to Change Nomenclature

Hawkins Aero requested that each time we reference the single crystal CT blades in this AD we use the nomenclature “P&WC single crystal CT blade P/N’s 3072791-01 and 3072791-02.” The commenter states that “In several locations within the SNPRM the FAA has referred to: ‘single crystal CT blades P/Ns 3072791-01 or 3072791-02,’ ‘CT blades, part numbers P/Ns 3072791-01 or 3072791-02,’ and ‘P&WC single crystal CT blades P/Ns 3072791-01 or 3072791-02’.”

We agree. We changed this AD by replacing all references to the single crystal CT blades with the nomenclature “P&WC single crystal CT blades, P/Ns 3072791-01 and 3072791-02.”

Request to Clarify Compliance Language

One commenter requested that we clarify the language in paragraph (e)(1)(iii)(A) of this AD with a specific P/N.

We do not agree. Operators may install any P/N single crystal CT blade eligible for installation. We did not change this AD.

Request to Clarify Assumptions

One commenter requested that we re-evaluate the 1,800 hour assumption for a typical hot section interval. The commenter states, “Assuming that 1,800 hours is the normal interval for all operators is incorrect; some operators have extended intervals up to and including On Condition; therefore, stating to perform the AD at next HSI could be much longer than the expected 1,800 hours.”

We do not agree. We did not assume 1,800 hours as a typical HSI interval. This AD requires blade examination or replacement at next HSI, and not at specific flight-hour

or cycles-in-operation intervals, precisely due to the wide variety of approved inspection intervals that exist for these engines. We did not change this AD.

Conclusion

We reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting this AD with the changes described previously. We determined that these changes will not increase the economic burden on any operator or increase the scope of this AD.

Costs of Compliance

We estimate that this AD affects 300 engines installed on airplanes of U.S. registry. We also estimate that it will take about 4 hours per engine to perform the required inspection and 8 hours to replace the blades. The average labor rate is \$85 per hour. Required parts cost about \$59,334 per engine. Based on these figures, we estimate the cost of this AD on U.S. operators to be \$18,106,200, if all blades are replaced.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. "Subtitle VII: Aviation Programs," describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in "Subtitle VII, Part A, Subpart III, Section 44701: General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority

because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska to the extent that it justifies making a regulatory distinction, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

- 1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

2014-17-08 Pratt & Whitney Canada Corp.: Amendment 39-17961; Docket No. FAA-2013-0766; Directorate Identifier 2013-NE-26-AD.

(a) Effective Date

This AD becomes effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to all Pratt & Whitney Canada Corp. (P&WC) PT6A-114 and PT6A-114A turboprop engines.

(d) Unsafe Condition

This AD was prompted by several incidents of compressor turbine (CT) blade failure, causing power loss, and engine failure. We are issuing this AD to prevent failure of CT blades, which could lead to damage to the engine and damage to the airplane.

(e) Compliance

Comply with this AD within the compliance times specified, unless already done.

(1) For engines that have CT blades installed other than P&WC single crystal CT blades, part numbers (P/Ns) 3072791-01 or 3072791-02, perform the following actions:

(i) Within 150 operating hours after the effective date of this AD, perform a borescope inspection (BSI) of CT blades for engines with 500 or more hours time-since-new that have not been previously inspected or time-since-last-inspection (TSLI).

(ii) Thereafter, repeat the inspection in paragraph (e)(1)(i) of this AD within 500 flight hours TSLI.

(iii) During the next hot section inspection (HSI) after the effective date of this AD, and each HSI thereafter, replace the complete set of CT blades with any of the following:

(A) New CT blades;

(B) CT blades that have passed a two-blade metallurgical examination in accordance with paragraph 3.B., Accomplishment Instructions, of P&WC Service Bulletin (SB) No. PT6A-72-1669, Revision 9, dated June 28, 2013; or

(C) P&WC single crystal CT blades, P/Ns 3072791-01 or 3072791-02.

(2) Reserved.

(f) Mandatory Terminating Action

Within 36 months after the effective date of this AD, replace the complete set of CT blades with P&WC single crystal CT blades, P/Ns 3072791-01 or 3072791-02.

(g) Credit for Previous Action

If you performed a metallurgical examination of single crystal CT blades before the effective date of this AD in accordance with P&WC SB No. PT6A-72-1669, Revision 8, dated January 17, 2013, or earlier versions, all of which are not incorporated by reference, you have met the initial inspection requirements of paragraph (e)(1)(i) of this

AD. However, you must still comply with the repetitive BSI requirement of paragraph (e)(1)(ii) of this AD.

(h) Alternative Methods of Compliance (AMOCs)

The Manager, Engine Certification Office, FAA, may approve AMOCs to this AD. Use the procedures found in 14 CFR 39.19 to make your request.

(i) Related Information

(1) For more information about this AD, contact Robert Morlath, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7154; fax: 781-238-7199; email: robert.c.morlath@faa.gov.

(2) Refer to Transport Canada Civil Aviation AD CF-2013-21R1, dated November 13, 2013, for more information. You may examine the MCAI in the AD docket on the Internet at <http://www.regulations.gov/#!documentDetail;D=FAA-2013-0766-0008>.

(j) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Pratt & Whitney Canada Service Bulletin No. PT6A-72-1669, Revision 9, dated June 28, 2013.

(ii) Reserved.

(3) For P&WC service information identified in this AD, contact Pratt & Whitney Canada Corp., 1000 Marie-Victorin, Longueuil, Quebec, Canada, J4G 1A1; phone: 800-268-8000; fax: 450-647-2888; Internet: www.pwc.ca.

(4) You may view this service information at FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

(5) You may view this service information at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Burlington, Massachusetts, on August 18, 2014.

Richard P. Warren,
Acting Assistant Directorate Manager, Engine & Propeller Directorate,
Aircraft Certification Service.

[FR Doc. 2014-20453 Filed 09/02/2014 at 8:45 am; Publication Date: 09/03/2014]